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(54) Abstract Title
Physical link tags for mobile telecommunications

(57) A programmable physical link tag stores and transmits data to a user communication device. The transmission may be in response to a transmitted request and contain information, such as a URL, about the object to which the plink tag is attached. The mobile may then connect to a network in order to retrieve further information such as context-id which acts to modify the request for information. The context may include factors such as personal details, location or personal preferences, and may be used to aid an internet search engine.

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IMPROVEMENTS IN AND RELATING TO INFORMATION COMMUNICATION
SYSTEMS

This invention relates to the field of communications and more specifically, but not exclusively, to the application of digital communications for the purposes facilitating access to information relating to specific objects, articles, products, items, locations, people and services.

Ever increasing public access to information via the internet has produced a rapid expansion in the development of so called 'search engine' programs. These specialist programs allow a user to enter requests for, and receive information relating to, objects, articles, products, services or subject matter on which they seek more details.

The mechanisms by which different search engines seek the required information vary widely and typically include the referencing of databases of key words, company details and specific targeted service providers (i.e. travel, education, news etc.) Additionally, in some instances search engines also pass requests for information onto other search engines to provide a compilation of results from the other search providers.

Current search engines suffer from an inherent problem in that in the absence of detailed information relating to a specific user, all search requests are conducted in the same 'context' for all users, or, at best, at a country-level i.e UK and Ireland or USA. To give an example, a request for details relating to holidays posted by a pensioner could conceivably result in a list of results covering extreme sports holidays, holidays for children or teenagers, National holidays and so on. Additionally, any request for information relating to an item or product will often result in links or addresses being identified leading to a particular company web

site 'home page', the user then having to navigate through a series of menus and pages to arrive at the information they require.

The invention described herein provides the ability to request information relating to objects, products, items, locations, people and services, taking into account the 'context' in which the request is made, the 'context' being optionally comprised of information relating to the personal details, physical location or requested preferences of a requestor.

Accordingly there is provided apparatus for the communication of information, comprising a user communication device, said user communication device being operable to receive data transmitted from a programmable physical link tag, said programmable physical link tag comprising means for storing and transmitting said data.

Additionally there is provided an information communication system comprising at least one user communication device, said at least one user communication device being operable to receive data transmitted from at least one programmable physical link tag, said at least one programmable physical link tag comprising means for storing and transmitting said data.

In a first embodiment of the invention, a user communication device comprises a mobile phone, the mobile phone possessing the ability to request information from a programmable physical-link tag means (hereinafter referred to as plink-tags).

In a second embodiment of the invention said user communication device comprises a device which possesses the ability to interrogate plink-tags and store specific identification and address link details (id-details). These id-details can subsequently be used for initiating a request for information via the address link details provided.

In a third embodiment of the invention an information system comprises the use of context identification data (hereinafter referred to as a context-id), said data being provided to operate on a user communication device such that when said user communication device receives data relating to a specific available context-id or number of context-id's available for selection by a user, any such selection or selections results in the any data received from a plink-tag being modified in accordance with context-id instructions contained in said data.

Some preferred embodiments of the invention will now be described by way of example only. References to the following examples shall not be considered as limiting the scope of the invention, the applications, benefits and scope of which is readily applicable to a wide range of retail, commercial, security and identification applications.

The invention utilises a user communication device, designed or adapted to interrogate plink-tags which can be associated with, attached to, or integral with virtually anything, for example including but not limited to, products, items, specific locations, vehicles, people and service providers, (collectively hereafter known as goods).

References to a user communication device shall be taken to comprise any transceiver or receiver designed for or adapted for the use of receiving data, and shall include, but shall not be limited to mobile phones, including next generation G3 phones and any device capable of, or dedicated to, the transmission of and/or reception of data in accordance with the invention.

Each plink-tag can be programmed with specific id-details giving either a communication path or route information in a format and syntax such as that provided by the Universal Resource Locator (URL) format or the like, commonly

utilised by Internet search engines and server routing systems. Alternatively, id-details may be held in the form of a Physical Resource Locator or Physical URL (PRL) which can be described as a special case of a URL which identifies a physical object rather than a document held on a database accessed by the web, or by some unique identifier which can subsequently be converted into a URL/PRL type address in accordance with the particular context-id or context-ids being utilised by the user communication device at that time.

By way of further clarification, a URL does not attempt to restrict what a 'resource' is but is merely a way of identify a particular resource. The definition URL is most commonly used when referring to 'http' URLs , that is URLs which start with http:// and which correspond to ordinary web addresses. The 'http' element of the address serves to indicate that the resource being identified is in fact a hypertext document.

For the purposes of describing the invention, a PRL can be defined as a URL which identifies a 'physical object'. In this way a PRL could have a new format prefix replacing the 'http' prefix, for example 'thing', 'person' or 'place' . As a PRL identifies a physical 'object' rather than a document, it requires translated into a document URL before any information can be displayed. This translation would typically be performed by a redirection server, which for the purposes of the invention could be referred to as a plink server.

The invention is not limited to the use of path or route syntax in the format of a URL/PRL and any references to such are not to be construed as limiting and are to be considered to be references encompassing the use of all similar and equivalent types of path, address and routing identification.

When using an information communication system in accordance with the invention, a person requiring information on goods having a plink-tag associated with, attached to, or incorporated within, would typically request the information by

using a communication device to transmit a signal requesting a response from a plink-tag within a pre-defined range or location.

The id-details contained in the plink-tag in question will be transmitted back to the communications device. The id-details received may be in a message format that can be displayed on the communications device or a device connected to it (i.e. price, availability, delivery time etc...), or, more usually, in the form of an address such a URL or PRL (document URL or physical URL respectively) from which the information requested can be accessed.

Information in the context of the invention is not limited to textual information and may comprise video, audio, speech or control function data, or datafile or software that may be presented to a user by and/or run locally on the communications device or a device with which it can interface. Any information received by a communication device may be locally stored (cached in a user communication device etc.), its reference (e.g. URL/PRL) stored for future use (bookmarked), or alternatively the information may be transmitted to a different user via the communication device or other device able to store such data, to enable other users and compatible equipment to make use of it.

If a the communications device is capable of connecting to a URL address, for example via a telephony based internet connection, then if requested by the user, the information can be accessed and displayed on either the communications device or a device connected to it. The use of telephony based connection is given by way of example only and references to such should be construed as embracing all other methods of connection to information communication systems including but not limited to cable, radio and microwave frequency wireless transmissions, digital terrestrial and satellite transmission methods.

Alternatively some communication devices may not be enabled to display messages or connect to addresses received from plink-tags. Such devices will

typically be used to store received id-details for later downloading or interfacing to a system or systems enabled for viewing of messages and/or connection to the received addresses. Furthermore, the downloading of information for purposes other than visual or audio playback provides for control functions to be transmitted to items of equipment. An example of such use would be the later downloading of recipe instructions and cooking times to an oven adapted to receive such data.

Plink-tags themselves maybe either active, passive or a combination of both in their mode of operation. An active plink-tag would typically have an on board power source capable of providing constant or intermittent 'chirping' transmissions of its id-details, for reception by a user communication device that comes into reception range. A passive plink-tag however may or may not possess an on-board power source, but its mode of operation may be such that transmission of its on board id-details would be energised and activated in response to a specific request from a user communication device.

A 'combination' plink-tag would possess the ability to operate in both active and passive modes, with the switch to active mode being typically triggered by such events as being activated by a user communication device whilst in passive mode. Alternatively, in the absence of a specific number of user activated responses, or for example at a pre-determined time of day or date or on reception of a specific signal, a combination plink-tag could be programmed to switch into passive mode or alternatively back into active mode on a similar signal or command. This facility could enable plink-tags to be switched into passive mode (or even switched off) out of trading hours, therefore helping to preserve battery life.

The power requirements of passive plink-tags could be provide in part or in whole by the power of the user communication device when the request is transmitted to obtain id-details from the plink-tag. Radio frequency (RF) power transmitted from the user communications device could be utilised to energise circuitry associated with or comprised in the plink-tag (i.e. such as an inductive coil means) thereby

providing sufficient transmission power to enable the plink-tag to transmit its id-details to a user communication device.

Use of a passive plink-tag incorporating power source required to be 'energised' could provide benefits in relation to the selectability and targeting of specific and discrete goods for which id-details are required. This could help to reduce the probability of multiple plink-tags being energised on a single request from a user communication device. Additionally a user communication device could incorporate selectable transmission power levels to limit the range at which plink-tags are energised (i.e. from wide area applications at hundreds of metres range through to the communication device being required to physically touch the plink-tag.)

An information communication system in accordance with the invention may comprise the use of one or more context-id's. Typically a context-id transmitter may comprise a device which is either constantly transmitting or chirping a signal in response to which a user communication device can be programmed to respond by informing the user that a location context id signal has been received. Alternatively a plink-tag may itself be the source of context-id information which may be specifically requested by a user if the plink-tag is in passive mode, or may be received by a communication device without such a request if the plink-tag is in active mode.

In addition to location context-ids, the system may utilise other discrete identifiers of context-id, for example physical touch and wide area broadcast (i.e. a town city, county or country context-id). Other forms of context-id may be contained in specific products, for example a microwave oven, which may have a context-id associated with it which when activated or accepted by a communications device, results in any subsequent response from a request for information directed at a food stuff to be returned with estimated cooking times for that oven.

The above example demonstrates the context-id layering ability of the invention, it being possible to accept and use multiple contexts, the acceptance order or hierarchy of which can be tailored to determine the type of information displayed to a user. An example of multiple context layering would be a context-id acceptance order of '... in specific shop / recipes / British beef / ...', whereupon if id-details were requested from a particular food stuff, the information displayed to the user may identify a beef recipe, using the food stuff, and suggest alternative or additional goods that could be used or substituted and are currently available in that specific shop.

The use of a location based context-id signal is to alert the user to the fact that they have entered a specific location or area in which it is possible for the information responses from plink-tags to be interpreted differently from such responses received outside of the defined location or area. For example, if a person were to request information from goods incorporating a plink-tag whilst in a home environment, then the message received may give details of the make, model and number of the goods, with the URL addressing the manufacturer of the goods in question.

If however a person were viewing the same goods in a shop which had a local context id transmitter, if they had accepted the request to change context received by the communication device on entering the area of the shop, then the message received may differ. The change of context could provide for the message to be prefaced with price and availability details for the specific shop in question, by redirecting the Physical URL (PRL) to a shop or company URL .

The ability to change contexts, or switch between context would typically be a feature of the communications device, thereby allowing the user that ability to tailor the type and level of information received. Additionally context-id filtering could be applied to the communication device, whereby a user could opt not to be notified

of any or a selection of context-id messages received, or alternatively to automatically accept some or all such changes of context-id.

The significance of each plink-tag containing id-details relating to specific goods can now be fully appreciated, and lies in the ability for a change in context-id to determine the location from where information is actually retrieved. The id-data contained in a plink-tag will typically set at the time of manufacture or dispatch and uniquely identify the goods or class of goods with which it is to be associated. However, a change in context-id initiated by means such as a location context-id signal or a user context-id selection enables the id-details to be interpreted in a targeted manner. The change of context-id acts so as to modify the information presented to the user which can therefore be tailored for a specific purpose.

The ability to tailor the response to plink-tag id-details allows a goods manufacturer to uniquely identify a product, but also provides retailers, distributors, service providers, users etc with the ability to utilise the id-details in a way that is determined by the selected context-id under which the communication device is operating.

When using an information system in accordance with the invention it can be readily appreciated that as a communication device is moved from location to location there could be many changes of context and information being received by the device. These changes of context and the ability for the user to select or filter such information provides for the delivery of information in a manner not possible using a state of the art search engine.

The invention will allow retailers and service providers the ability to target users with differing levels of specific information, and conversely give users the ability to target goods for which they require specific information, with the ability to determine the context-id in which the request is made. For example, requesting plink-tag id-details whilst in a standard (default) context-id mode at a friends home

may allow a user to obtain details on goods such as a bottle of wine, a television, a sofa or for example a car on the drive. When using the system to request the same information about a bottle of wine whilst in a wine shop, acceptance of a location based context-id may allow the user to open an account with that shop or chain, conclude an online purchase and organise delivery using a communication device without having to verbally contact sales staff.

One further example of the use of the invention would be in the field of personal identification. A human or animal could wear or carry a plink-tag which had been pre-programmed with a URL or PRL, the address from which could help to identify the person, or give further details as to personal preferences and context-ids for use by or with the person in question or by other seeking such information. Examples of such information could be medical details, home or contact addresses, dietary requirements, shopping preferences, emergency details and the like.

An additional feature of the communication device could be the integration of an on-board plink-tag, holding id-details relating to the device specification and/or user or owner.

CLAIMS

1. Apparatus for the communication of information, comprising a user communication device, said user communication device being operable to receive data transmitted from a programmable physical link tag, said programmable physical link tag comprising means for storing and transmitting said data.
2. Apparatus for the communication of information in accordance with claim 1 wherein said programmable physical link tag transmits data in response to a transmitted request from said user communication device.
3. Apparatus for the communication of information in accordance with claim 1 or claim 2 wherein said user communication device comprises means for presenting data received from said programmable physical link tag to a user.
4. Apparatus for the communication of information in accordance with claims 1,2 or 3, wherein said data comprises an address in the format of a URL or the like from which information can be requested.
5. Apparatus for the communication of information in accordance with any of claims 1 to 4, wherein said data comprises information relating to a physical object with which a programmable physical tag means is associated.
6. Apparatus for the communication of information in accordance with any of claims 1 to 5, wherein said user communication device comprises means for connecting to a communications network and accessing information in accordance with said data.
7. Apparatus for the communication of information in accordance with any of claims 1 to 6, wherein said user communication device is operable to receive

context-id information, said context-id information acting so as to modify any request for information made in accordance with said data.

8. An information communication system comprising at least one user communication device, said at least one user communication device being operable to receive data transmitted from at least one programmable physical link tag, said at least one programmable physical link tag comprising means for storing and transmitting said data.
9. An information communication system in accordance with claim 8 wherein at least one programmable physical link tag transmits data in response to a transmitted request from at least one user communication device.
10. An information communication system in accordance with claim 8 or claim 9 wherein at least one user communication device comprises means for presenting data received from at least one programmable physical link tag to a user.
11. An information communication system in accordance with claims 8, 9 or 10, wherein said data comprises an address in the format of a URL or the like from which information can be requested.
12. An information communication system in accordance with any of claims 8 to 11, wherein said data comprises information relating to a physical object with which a programmable physical tag means is associated.
13. An information communication system in accordance with any of claims 8 to 12, wherein said at least one user communication device comprises means for connecting to a communications network and accessing information in accordance with said data.
14. An information communication system in accordance with any of claims 8 to 13, wherein said at least one user communication device is operable to

- receive context-id information, said context-id information acting so as to modify any request for information made in accordance with said data.
15. Apparatus for the communication of information substantially as herein described with reference to the accompanying description.
 16. An information communication system substantially as herein before described with reference to the accompanying description.



Application No: GB 0027846.5
Claims searched: 1-16

Examiner: Robert Shorthouse
Date of search: 27 July 2001

Patents Act 1977
Search Report under Section 17.

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): H4L (LASS, LACA, LDPPX, LDPPB, LERM, LESF), G4A (AFGX)

Int Cl (Ed.7): H04Q 7/22, G06F 13/38, G09B 5/04, /06

Other: Online: WPI, EPODOC, JAPIO, INSPEC

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X, E	GB 2357404 A (ACTIVERF) See abstract	1, 3-6, 8, 10-13
X	GB 2328839 A (FMC) See abstract	1, 3-5, 8, 10-13
X	GB 2327565 A (IBM) See abstract	1-6, 8-13

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